

REMARKS/ARGUMENTS

The Office Action mailed September 25, 2003 has been reviewed and carefully considered. Claims 1, 14, 19, 20, 24, 25, and 29 are amended. Claims 1-29 are pending in this application, with claims 1, 14, 19, 20, 24, 25, and 29 being the only independent claims. Reconsideration of the above-identified application, as herein amended and in view of the following remarks, is respectfully requested.

Change of Correspondence Address

The Office Action mailed September 25, 2003 did not reflect the Change of Correspondence Address which was filed on January 2, 2003. A communication was filed December 18, 2003 including a copy of that Change of Correspondence Address which was previously filed on January 2, 2003 and which reflects a necessary change based on the Power of Attorney form which was filed on September 28, 2001. Please ensure that the U.S. Patent and Trademark Office records for this application are updated in accordance with these documents.

Response to Claim Rejections

In the Office Action mailed September 25, 2003, claim 1 stands rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 6,009,311 (Killion).

Claims 1-5, 8-9, 11-12, 14-17 and 20-29 stand rejected under 35 U.S.C. §103 as unpatentable over Killion in view of U.S. Patent No. 6,211,671 (Shattil).

Claim 18 stands rejected under 35 U.S.C. §103 as unpatentable over Killion and Shattil and further in view of U.S. Patent No. 6,356,773 (Rinot).

Claims 6, 7, 10 and 13 stand rejected under 35 U.S.C. §103 as unpatentable over Killion and Shattil and further in view of U.S. Patent No. 5,995,854 (Wilson).

Before discussing the cited prior art and the Examiner's rejections of the claims in view of that art, a brief summary of the present invention is appropriate. The present invention relates to a shield device used in an apparatus to protect a user of the apparatus from electromagnetic fields emitted by an antenna of the apparatus. As shown in Fig. 1 of the present application, active shields 14a-14c are arranged in the apparatus between an antenna 12 and an operator's earpiece 10a. The active shields 14a-14c are radiating devices which substantially cancel or reduce the electromagnetic field created by and emanating from the antenna 12 (see page 3, line 21 to page 4, line 1). To accomplish the desired effect, the active shields 14a-14c create a near field which is opposite to the field produced by the antenna 12 (page 4, lines 5-7). A coupler 20 is connected to the antenna signal and outputs the signal to both the antenna 12 and the active shields 14a-14c (see Fig. 2). Adjustment circuits 22a-22c are connected between the coupler 20 and the active shields 14a-14c (page 4, lines 17-19). The adjustment circuits 22a-22c adjust the antenna signal such that the active fields 14a-14c radiate the near fields to substantially cancel or reduce the electromagnetic radiation from the antenna 12 which is directed toward the user (page 4, line 22 to page 5, line 2).

Each of the independent claims specifically recites that the apparatus includes an antenna creating an electromagnetic field. The independent claims have been amended to recite an active shield including a radiation device which generates a near field that substantially cancels the electromagnetic field in a predetermined region. Some of the independent claims are amended to include the phrase "substantially cancel". This phrase was present in the originally filed version of independent claim 1 and does not present new matter which requires further search and/or consideration.

Killion discloses a method and apparatus for reducing audio interference created by cellular telephone transmissions in hearing aids. As explained at col. 1, lines 38-42 in the Killion reference, the internal wiring in a hearing aid acts as an antenna. Existing digital cellular phones use a switched carrier that cycles on and off at a frequency of 50Hz (USDC) or 217Hz (GSM). Figs. 2 and 3 of Killion show that the carrier for a digital cellular phone is switched on during time slots 20 and is off for the remaining time periods. The interference problem between hearing aids and cell phones is caused by the interruptions of the carrier (see col. 3, lines 51-58). According to a first solution of Killion, "garbage" carriers 31 are transmitted by the cell phone in the spaces between the time slots 20 (col. 3, line 59 to col. 4, line 14), such that the signal to the hearing aid is substantially constant. Accordingly, the carrier fields 31 do not cancel the electromagnetic field from the main antenna.

In a further solution, Killion proposes that the cell phone has a local antenna 2 in addition to a main antenna 1. When the phone is transmitting in its time slot, the local antenna 2 is not energized (col. 4, lines 27-29). Between time slots, the phone energizes the local antenna 2 so that the near field generated by the local antenna 2 is equal to the near field generated by the main antenna 1 (col. 4, lines 29-34). Accordingly, the purpose of the local antenna 2 is not to cancel the electromagnetic field produced by the main antenna. Rather, the local antenna maintains or keeps constant the effects of the electromagnetic field in a predetermined area in the time slots when the main antenna is not active to prevent or reduce the audio interference caused by the switching of the carriers.

The additional embodiments described at col. 4, line 55 to col. 5, line 7 are merely variations of the above described embodiment in which the local antenna 2 is turned on when the main antenna is turned off.

The embodiments of Killion disclosed at col. 5, line 8 to col. 6, line 45 and shown in Figs. 5, 7, and 8 of Killion include a noise cancellation circuit within the hearing aid which operates to cancel the signal generated by the cell phone antenna and received by the hearing aid antenna. These embodiments have nothing to do with the embodiments which include a local antenna 2 on the cell phone.

In the Office Action, the Examiner refers to the Abstract, to col. 3, lines 12-15, to col. 4, lines 27-34, and to col. 5, lines 60-65. As clearly described above, the near field created by the local antenna does not cancel the electromagnetic field, as is now expressly recited in applicant's independent claims. Rather, the local antenna of Killion creates a near field that matches the near field created by the main antenna in the predetermined area of the near field. This reduces the detrimental effect that the switching of the near field created by the main antenna has on the hearing aid but does not cancel the electromagnetic field created by the main antenna. Since Killion does not cancel the electromagnetic field in a predetermined area, it is respectfully submitted that independent claim 1 is not anticipated by Killion.

The other references of record, Shattil, Rinot, and Wilson, also fail to disclose, teach, or suggest an "active shield including a radiation device which generates a near field that substantially cancels the electromagnetic field in a predetermined region". Shattil relates to a device having two or more coils for picking up external magnetic flux that induces signals in each of the coils and a cancellation circuit for canceling inductive noise components of the external magnetic flux. In Shattil, an interference-cancellation system for electromagnetic receivers adds a reference signal to a received signal to cancel inductive noise from the received signal (col. 4, lines 51-65). Inasmuch as Shattil merely teaches adjustment of the signal produced by the received radiation at a receiver, it fails to teach or suggest creating a near field to substantially cancel a magnetic field

generated by an antenna in a predetermined region, as in the present invention as recited in the claims.

Rinot is directed to a passive shield which absorbs electromagnetic radiation (col. 5, lines 24-25). Accordingly, Rinot likewise fails to teach or suggest the claimed active shield radiators for creating a near field for canceling the electromagnetic field created by the antenna in a predetermined area.

Wilson relates to a shielding accessory for a communication device. The shielding accessory comprises a microscreen with apertures sized to block RF radiation without blocking sound or light waves (col. 3, lines 51-54). Accordingly, Wilson also fails to teach or suggest an active shield comprising radiators for creating a near field that cancels the electromagnetic field produced by the antenna in a predetermined area.

It is therefore respectfully submitted that each of the independent claims 1, 14, 19, 20, 24, 25, and 29 is allowable over Killion in view of Shattil, Rinot, and/or Wilson.

Dependent claims 2-13, 15-18, 21-23 and 26-29, being variously dependent on one of independent claims 1, 14, 19, 20, 24, 25 and 29, are deemed allowable for at least the same reasons expressed above with respect to independent claims 1, 14, 19, 20, 24, 25 and 29.

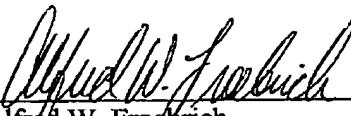
The application is now deemed to be in condition for allowance, and early notice to that effect is solicited.

It is believed that no fees or charges are required at this time in connection with the present application; however, if any such fees or charges are required at this time, they may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

Respectfully submitted,

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